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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Hirohito Kondo

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EXAMINER

AL HASHIMI, SARAH

ART UNIT

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2853

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/730,908	Applicant(s) KONDO ET AL.	
	Examiner SARAH AL HASHIMI	Art Unit 2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 2 and 11-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-8 is/are rejected.
- 7) ☒ Claim(s) 9-10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>12/10/2003, 11/13/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Applicant's election of claims 1,3-10 in the reply filed on 03/18/2008 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 2,11-24 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 03/18/2008.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

4. The information disclosure statements (IDS) submitted on 11/13/2006 and 12/10/2003 are in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statements are being considered by the examiner.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1,3,6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Aikoh (US 6,100,913).

Aikoh teaches:

Claim 1: an LED print head having an LED array formed by a plurality of LED elements which are controlled to emit light in accordance with image data and a drive circuit for driving the plurality of LED elements; and an LED array controller for driving and controlling the LED print head, wherein the LED array controller includes:

a characteristic data memory for storing a plurality of pieces of characteristic data regarding each of the plurality of LED elements; and a drive current correction data calculator for reading out the characteristic data from the characteristic data memory and calculating drive current correction data for each of the plurality of LED elements on a basis of the characteristic data (fig 2 and col 1 lines 29-32 “the measured light differences are converted into correction data so that each LED is subsequently supplied with a drive current corresponding to the correction data”).

Claim 3: in the characteristic data memory, light quantity data regarding each of the plurality of LED elements is stored as the characteristic data (fig 2 #6).

Claim 6: an LED print head having an LED array formed by a plurality of LED elements which are controlled to emit light in accordance with image data and a drive circuit for driving the plurality of LED elements; and an LED array controller for driving and controlling the LED print head, wherein the LED array controller includes: a characteristic data memory for storing a plurality of pieces of characteristic data regarding each of the plurality of LED elements (fig 2); and a drive current correction data calculator for reading out characteristic data of a predetermined LED element and characteristic data of a plurality of LED elements in a predetermined range including the predetermined LED element out of the plurality of pieces of characteristic data from the characteristic data memory, and calculating drive current correction data for the predetermined LED element on a basis of the characteristic data of the predetermined LED element and the characteristic data regarding each of the plurality of LED elements in the predetermined range (fig 3).

Claim 7: an LED print head having an LED array formed by a plurality of LED elements which are controlled to emit light in accordance with image data and a drive circuit for driving the plurality of LED elements; and an LED array controller for driving and controlling the LED print head, wherein the LED array controller includes: a characteristic data memory for storing a plurality of pieces of characteristic data regarding each of the plurality of LED elements (fig 2); and a drive current correction data calculator for reading out characteristic data of a predetermined LED element and an average value of characteristic data of a plurality of LED elements in a predetermined range including the predetermined LED element out of the plurality of

pieces of characteristic data from the characteristic data memory, and calculating drive current correction data for the predetermined LED element on a basis of the characteristic data of the predetermined LED element and the average value of the characteristic data regarding each of the plurality of LED elements in the predetermined range (fig 3 steps 2,3, 8,9 in particular).

Claim 8: an LED print head having an LED array formed by a plurality of LED elements which are controlled to emit light in accordance with image data and a drive circuit for driving the plurality of LED elements; and an LED array controller for driving and controlling the LED print head, wherein the LED array controller includes:

a characteristic data memory for storing a plurality of pieces of characteristic data regarding each of the plurality of LED elements (fig 2); and a drive current correction data calculator for reading out characteristic data of a predetermined LED element and an average value of characteristic data of all of the plurality of LED elements forming the LED array out of the plurality of pieces of characteristic data from the characteristic data memory, and calculating drive current correction data for the predetermined LED element on a basis of the characteristic data of the predetermined LED element and the average value of the characteristic data of all of the plurality of LED elements constructing the LED array (fig 3).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

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invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aikoh (US 6,100,913) in view of Wong (US 2003/0007062).

Aikoh does not teach but Wong teaches:

Claim 4: in the characteristic data memory, data regarding a beam emitted from each of the plurality of LED elements is stored as the characteristic data (para 37 “spatial profile memory 48 that contains computed beam diameter values D.sub.1”).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Aikoh to incorporate in the characteristic data memory, data regarding a beam emitted from each of the plurality of LED elements is stored as the characteristic data for the purpose of improved imaging.

10. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Aikoh (US 6,100,913) in view of Hamada (US 6,340,983).

Aikoh does not teach but Hamada teaches:

Claim 5: in the characteristic data memory, resolution data regarding each of the plurality of LED elements is stored as the characteristic data (fig 2 #30).

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify Aikoh to incorporate in the characteristic data memory, resolution data regarding each of the plurality of LED elements is stored as the characteristic data for better accuracy in improving imaging.

Allowable Subject Matter

11. Claims 9&10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

12. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 9 is the inclusion of the limitation of an image forming apparatus that includes the drive current correction data satisfies the following equation:

$$P_n = a_n + \alpha \cdot (b_n - B_{ave}) / B_{ave}$$

where P_n represents drive current correction data of the n-th LED element,

a_n represents drive current reference data of the n-th LED element for making the light quantity for each of the LED element substantially equal,

b_n represents data regarding a beam of the n-th LED element,

B_{ave} represents an average value of data regarding beams of all of the LED elements

or an average value of data regarding beams of a plurality of LED elements in a

predetermined range including the n-th LED element, and

(α represents an arithmetic coefficient regarding a beam. It is this limitation found in

claim 9, as it is claimed in the combination of, that has not been found, taught or

suggested by the prior art of record which makes these claims allowable over the prior art.

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The primary reason for the allowance of claim 10 is the inclusion of the limitation of an image forming apparatus that includes the drive current correction data satisfies the following equation:

$$P_n = a. + \alpha \cdot (b_n - B_{ave}) / B_{ave} + \beta \cdot (C_n - C_{ave}) / C_{ave}$$

where P_n represents drive current correction data of the n -th LED element,

$a.$ represents drive current reference data of the n -th LED element for making the light quantity for each of the LED element substantially equal,

b_n represents data regarding a beam of the n -th LED element,

B_{ave} represents an average value of data regarding beams of all of the LED elements

or an average value of data regarding beams of a plurality of LED elements in a predetermined range including the n -th LED element,

α represents an arithmetic coefficient regarding a beam,

C_n represents resolution data of the n -th LED element,

C_{ave} represents an average value of resolution data of all of LED elements or an

average value of resolution data of a plurality of LED elements in a predetermined range including the n -th LED element, and

β represents an arithmetic coefficient regarding resolution. It is this limitation found in

claim 10, as it is claimed in the combination of, that has not been found, taught or

suggested by the prior art of record which makes these claims allowable over the prior art.

Conclusion

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

(US 6,433,804) discloses an LED where characteristics are used to modify drive current in image generation.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARAH AL HASHIMI whose telephone number is (571)272-7159. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Meier can be reached on 571 272 2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either PAIR or Public PAIR. Status information for unpublished applications is available through PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/SA/

/An H. Do/

Primary Examiner, Art Unit 2853